

DESIGN & CONSTRUCTION CRITERIA COMPLETENESS CHECKLIST

CHAPTER NR 504

Note: This checklist is used for plan of operation completeness and any engineering elements required to be or voluntarily submitted in the feasibility submittal.

Refer to Applicable Statutes and Codes for Exact Requirements

General Information

Facility Name: _____

License/Monitoring # _____

Facility Type: _____

Initial Submittal: Date Received: ____/____/____ Completeness Due: ____/____/____ DNR Response: ____/____/____ (Complete: __ yes __ no)

Addendum # ____ Date Received: ____/____/____ Completeness Due: ____/____/____ DNR Response: ____/____/____ (Complete: __ yes __ no)

Addendum # ____ Date Received: ____/____/____ Completeness Due: ____/____/____ DNR Response: ____/____/____ (Complete: __ yes __ no)

Addendum # ____ Date Received: ____/____/____ Completeness Due: ____/____/____ DNR Response: ____/____/____ (Complete: __ yes __ no)

Addendum # ____ Date Received: ____/____/____ Completeness Due: ____/____/____ DNR Response: ____/____/____ (Complete: __ yes __ no)

Proposed Waste Types: _____

Proposed Total Design Capacity: _____ (including daily and intermediate covers)

DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
NR 504.04(3) LOCATIONAL CRITERIA. Are the proposed limits of filling within:					
(a) 1,000 feet of any navigable lake, pond or flowage? __ yes __ no __ If yes, was an exemption requested?					
(b) 300 feet of any navigable river or stream? __ yes __ no __ If yes, was an exemption requested?					
(c) A 100-year flood plain? __ yes __ no __ If yes, was an exemption requested?					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(d) 1,000 feet of any state trunk highway, interstate or federal aid primary highway or any public park? <input type="checkbox"/> yes <input type="checkbox"/> no If yes, was a line of site study provided showing that the landfill would not be visible from the road or park or, <input type="checkbox"/> was an exemption requested?					
(e) 10,000 of the end of an airport runway designed or planned to be designed and used by turbojet aircraft or within 5,000 feet of any airport runway designed for and used by piston type aircraft? <input type="checkbox"/> yes <input type="checkbox"/> no Is FAA notification required? <input type="checkbox"/> yes <input type="checkbox"/> no Note: If the proposed limits of waste filling would be within <u>5 miles</u> of the end of the runway of any airport used by turbojet or piston type aircraft, the applicant must provide notice to both the Federal Aviation Administration (FAA) and the affected airport. The report should contain all correspondence related to the notices including any determinations made by the FAA.					
(f) 1,200 feet of any water supply well (i.e. public, private, irrigation or stock water supply wells)? <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> was an exemption requested? If yes, have the following been provided for each identified well? <input type="checkbox"/> well location <input type="checkbox"/> former and present well owner <input type="checkbox"/> well driller <input type="checkbox"/> well construction log Note: Exemptions may not be granted if the above information is not provided.					
NR 504.04(4) PERFORMANCE STANDARDS. Will the proposed landfill have the following:					
(a) A significant adverse impact on wetlands? <input type="checkbox"/> yes <input type="checkbox"/> no Has a practicable alternatives analysis and a wetland functional values analysis been completed in accordance with ch. NR 103, if a wetland will be affected by the proposed landfill or any noncommercial soil borrow source activity? (See DNR guidance for the solid waste program on NR 103)					
(b) A significant adverse impact on critical habitat areas? <input type="checkbox"/> yes <input type="checkbox"/> no If required, has a critical habitat study been submitted? <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> NA					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(c) A detrimental effect on any surface water? ___ yes ___ no Note: exemptions are <u>not</u> granted					
(d) A detrimental effect on groundwater quality or will cause or exacerbate an attainment or exceedance of any preventive action limit or enforcement standard at a point of standards application? ___ yes ___ no					
Has the applicant requested an exemption to the groundwater standards in accordance with ss. NR 507.29 and NR 140.28, Wis. Adm. Code? If an exemption is required, does the feasibility report include: a) A list of the specific wells and parameters for which an exemption is being requested. b) A discussion of how the criteria listed in s. NR 140.28(2), (3) and (4) are met.					
(e) The migration and concentration of explosive gases in excess of 25% of the lower explosive limit for such gases at any time? ___ yes ___ no					
(f) The emission of any hazardous air contaminant exceeding the limitations for those substances contained in s. NR 445.03? ___ yes ___ no					
NR 504.05 General design and construction criteria.					
(1) Is supporting justification included for any differences from ss. NR 504.06 to 504.09?					
(2) Is the proposed operating life of the landfill between 10 and 15 years?					
(3) If the proposed life is not between 10-15 years is the facility exempted in s. 289.28(2), Stats. or the expansion of an existing facility?					
NR 504.06 Minimum design and construction criteria for landfill liners and leachate collection systems.					
(1) GENERAL					
(a) If the landfill is proposed to accept municipal solid waste does the design incorporate a composite liner and a leachate collection system capable of limiting the average leachate head on the composite liner to 1 foot or less during operation and after closure of the landfill?					
(b) Does the composite liner consist of the following: ___ An upper geomembrane component with nominal 60-mil minimum thickness ___ A lower component of 4 foot minimum compacted clay meeting NR 504.06(2)(a)					
(2) COMPOSITE OR CLAY LINED LANDFILLS. Does the composite liner or clay liner design meet the following requirements:					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(a) Does all clay used in liner construction meet the following specifications: ___ A minimum of 50% by weight passing 200 sieve ___ A saturated hydraulic conductivity of 1×10^{-7} cm/sec or less ___ An average liquid limit of 25 or greater with no values less than 20 ___ An average plasticity index of 12 or greater with no values less than 10					
(b) Is there at least a 10 foot separation between the seasonal high groundwater table and the bottom of the clay liner component?					
(c) Is there at least a 10 foot separation between the bedrock surface and the bottom of the clay liner component?					
(d) Is there a minimum 2% liner surface slope toward the leachate collection system?					
(e) Is there a minimum 4 foot thick clay component of a composite liner or a minimum 5 foot clay liner thickness?					
(f) 1. Is the clay constructed in the following manner: ___ Lift heights no greater than 6 inches after compaction ___ Footed compaction equipment having feet at least the loose lift height ___ Disking or mechanical processing of clay to break up clods and adjust moisture ___ Clod size no greater than 4 inches ___ All compaction equipment have a minimum static weight of 30,000 pounds ___ Alternative procedures or equipment proposed					
2. Are sufficient equipment passes proposed to ensure complete remolding of clay?					
3. Is compaction proposed to 90% modified Proctor density at 2% wet of the optimum or 95% standard Proctor density at wet of the optimum moisture content? Alternately, the line of optimums method may be used.					
(g) Are interior sidewall slopes at a maximum of 3H: 1V or at a minimum of 5H: 1V?					
(h) Are clay components of the liner in adjacent phases keyed together?					
Is the keying accomplished by excavating a minimum of 4 steps with a total width of spliced area measuring at least 15 feet?					
(3) COMPOSITE-LINED LANDFILLS. If the landfill is composite lined, are the following requirements met?					
(a) Is the geomembrane specifically formulated for waste containment purposes?					
Is the nominal membrane thickness 60 mil or greater with no thickness below minimum tolerance?					
(b) Is there geomembrane protection along areas of traffic or concentrated activity such as sumps, sideslope risers and entry ramps?					
(c) Are geomembrane installations on slopes in excess of 10% installed with panel seams perpendicular to slope contour lines?					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(d) Will the clay surface be prepared as follows: ___ Rolling and grading of clay surface to remove irregularities, protrusions, loose soil and abrupt changes in grade, ___ Free of stone, grading stakes, construction debris and contain no areas softened by high water content ___ Sufficiently dry and dense clay surface such that the construction equipment will not create ruts ___ Depressions and large cracks filled with tamped clay					
(e) Will the geomembranes be welded as follows: ___ Geomembrane panel linear seams welded with double-tracked fusion welding machines, ___ Fusion welding of corners, butt seams and long repairs, ___ Extrusion or fusion welding for all other repairs, detail work and patches, ___ Request for Department approval for other welding methods.					
(f) Will geomembrane components in adjacent phases be welded together to form a continuous membrane surface?					
Will the liner extended beyond the proposed edge of waste at a phase junction be protected from traffic and weather ?					
(g) Will wrinkles which are taller than they are wide be smoothed or cut out prior to covering with soil?					
Will guidance be provided to machine operators placing soil on geomembrane by the use of an observer with an unobstructed view of the advancing lift of soil.					
(h) Are the following minimum soil thickness on geomembrane proposed before vehicular traffic may occur: ___ 1 foot for vehicles with ground pressure less than 5 pounds per square inch, ___ 2 feet for other vehicles equipped with tracks and floatation tires, ___ 3 feet or more for trucks or wheeled hauling equipment.					
(i) Will the landfill base and the lower 10 feet of the sideslope be covered with a drainage blanket within 30 days after completing quality control and quality assurance testing?					
Will the remaining sideslope be covered with either drainage material or geotextile?					
(j) Will placement of soil over the membrane be performed during cooler temperature periods to the extent possible using methods which minimize wrinkling?					
(k) Will anchor trenches be designed and constructed around the landfill to secure membrane edges?					
Will geomembrane be seamed completely to the edge of the panel end to minimize potential of tear propagation?					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
4) ZONE-OF-SATURATION LANDFILLS. Landfills with proposed base grades below the groundwater table must meet the following:					
(a) Is the landfill located in a fine-grained soil environment?					
(b) Does the landfill meet the requirements of sub. (2)(a), (d),(e),(f),(g) and (h) and the requirements under sub. (3), if the landfill will accept municipal solid waste?					
(c) Is an analysis performed on the effect which groundwater may have on uplift of the liner and the short and long-term stability of the geomembrane component?					
Does the analysis evaluate the effect of an underdrain or other dewatering system?					
(d) Have borings, backhoe pits or other means of exposing the subsurface soils been proposed on a 100-foot grid to a minimum 5 foot depth below the subbase grades of the liner?					
Are any granular or silty soils detected within this 5 foot depth proposed to be removed?					
(5) LEACHATE COLLECTION SYSTEMS. The leachate collection system must incorporate the following design features:					
(a) Does the leachate collection system design include the following features: ___ A leachate collection system included in each horizontal phase, ___ Leachate routed to the landfill perimeter in the most direct manner possible, ___ Limit average leachate head on the liner to 1 foot or less, ___ Limit maximum leachate flow distance to the perforated collection pipe to 130 feet.					
(b) Is the slope on the collection pipe a minimum of 0.5%?					
(c) Is the minimum diameter of all collection pipes 6 inches?					
Are all collection pipes proposed to be Schedule 80 PVC pipe or an approved substitute?					
(d) Do the leachate collection trenches conform to the following: ___ Rectangular leachate collection trenches for clay liners ___ V-trenches with a maximum 18 inches depth and 3H: 1V sideslope for composite liners ___ V-trenches smooth-drum rolled prior to placement of the membrane ___ Geotextile with a weight of 12 oz/yd ² lining the trench base and sidewalls and placed directly over the membrane ___ Geotextile not overlapped across the top of the trench.					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(e) Does the leachate collection pipe trench backfill conform to the following: ___ Uniformity coefficient of less than 4, ___ Maximum particle diameter of 1 ½ inches, ___ Maximum of 5% passing the number 4 sieve, ___ Rounded to subangular gravel, ___ Minimum 4 inches bedding depth before installation of leachate pipe, ___ Minimum 6 inches of granular material above the pipe, and an additional 6 inches of material mounded above the trench, ___ Graded soil filter or geotextile to minimize migration of drainage blanket into the trench, in cases where particle size of the bedding is significantly less than the collection trench bedding ___ No use of limestone and dolomite as trench backfill unless no other suitable material is reasonably available					
(f) Have the sand and gravel sizes and geotextile and pipe openings been analyzed for the control of piping of soil materials and have the materials been chosen to achieve a stable and self-filtering structure under all conditions of leachate flow?					
(g) Do leachate collection lines have cleanout access on both ends of pipes?					
Does each leachate collection line have a maximum distance of 1,200 feet from the end of one cleanout to the toe of the opposite slope?					
(h) Are there no vertical liner penetrations due to leachate lines, manholes and other engineering structures?					
For clay lined landfills, are liner penetrations limited to leachate transfer lines in the horizontal direction only? For composite lined landfills, are there no liner perforations?					
(i) Is a 4'x4', 5 foot thick, anti-seep collar placed around any leachate transfer line penetrating the clay liner?					
(j) Is the composite lined landfill designed with a sump and sideslope riser meeting the following requirements: ___ Sump volume and pump capacity sized to accommodate an annual leachate collection rate of 6 inches taking into account the potential for solids to build up over time. ___ Sump base protected with polyethylene plate or other means placed prior to sideslope riser and backfill installation. ___ Leachate discharge pipe between the sideslope riser and the tank installed with valves to prevent backflow into the waste disposal area.					
(k) Are gravity lines transporting leachate out of the landfill constructed with valves for flow control, and are the valves compatible with the leachate and operable from the ground surface?					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(l) Are all leachate lines located outside the landfill double-cased or in an approved secondary containment?					
Are all leachate transfer lines proposed to be pressure tested prior to use?					
Is the upslope end of secondary pipe sealed and the downslope end open to drain into the manhole?					
(m) Are all leachate transfer lines, manholes, lift stations and others structures outside the waste limits designed to meet the following: ___ Designed as shallow as practical, and as far from the waste limits as possible ___ Constructed above the seasonal high groundwater table unless it is not technically feasible to do so.					
(n) Are leachate collection tanks and manholes designed with the following: ___ Secondary containment to prevent leachate discharge to ground and surface water ___ Means to monitor the tank or manholes for leaks within the secondary containment unless some other method is approved by the Department					
(o) Are the leachate tanks designed to: ___ Contain leachate volume generated over a 4 day period, ___ Withstand the soil and liquid loads encountered during installation and use ___ Follow the consultant and manufacturer installation instructions.					
(p) Does the leachate loadout station design contain the following: ___ A proposal to prevent accidental leachate discharge at the loadout from entering ground or surface water, ___ A loadout station paved and sloped to a catch basin to direct all spills to a catch basin.					
(q) Are leachate and gas system manholes and enclosures vented and do they have controlled access?					
For landfills designed with active extraction, are manholes and enclosures designed to minimize air intrusion?					
(r) Are all pumps, valves and meters designed to be controlled and operated from ground surface?					
(s) Are all leachate and groundwater collection systems designed to monitor the liquid volume removed?					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(t) Is there a one foot thick granular drainage blanket placed on top of the geomembrane for a composite liner or on top of the clay component of a clay liner which contains the following elements: ___ Contains no more than 5% passing 200 sieve ___ Uniformity coefficient less than 4 for sandy soils and less than 6 for gravel soils ___ Hydraulic conductivity equal to or greater than 1×10^{-2} at anticipated field density ___ A minimum 12 oz/yd ² nonwoven geotextile below the drainage blanket if the granular layer contains stones greater than ¼"					
(u) If the major horizontal clay lined phase is above the saturated zone, is each phase designed with collection basin lysimeter (except for composite lined landfills)?					
NR 504.07 Minimum design and construction criteria for final cover systems.					
(1) GENERAL					
(a) Is the final cover system designed to? ___ Minimize leachate generation by limiting the amount of percolation through the cap ___ Reduce landfill maintenance by design of compatible surface slopes and vegetation ___ Account for differential settlement and other stresses on the capping layer ___ Minimize freeze-thaw effects and desiccation of clay capping layer ___ Provide for removal of leachate and venting of gas from landfills accepting wastes with high moisture content or that which is readily biodegradable					
(b) Does the final cover system meet the requirements of subs. (2) to (9) below unless the department has agreed to those portions of final cover system not proposed?					
Is the geomembrane component included in the final cover design unless this is proposed to be an exclusively high volume industrial or non-municipal waste landfill or is not composite lined?					
(c) If the landfill is designed with a composite liner, is it also designed with a final cover system meeting subs. (2) to (9) below, unless it is a composite lined phase of existing landfills which have completed final cover placement by July 1, 1996?					
(d) If the landfill is designed with an alternate final cover system, will the landfill accept papermill sludge or industrial waste with high moisture content and low strength?					
(2) GRADING LAYER.					
If this is a municipal solid waste landfill does design include a 6 inch grading layer above the final waste elevation?					
(3) SUPPORT LAYER AND LOW-STRENGTH WASTES.					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
If the landfill accepts industrial wastes with high water content and low strength, does the design include a support layer for stabilization, reinforcement and removal of leachate and gas?					
(4) CLAY CAPPING LAYER. Does the landfill design include a clay barrier layer with the following design elements:					
(a) Minimum 2 foot thick clay cap					
(b) Clay quality which meets the specifications in NR 504.06(2)(a)					
(c) Clay cap construction that meets the specifications in NR 504.06(2)(f)					
(5) GEOMEMBRANE LAYER. If a geomembrane layer is proposed, does the proposal meet the requirements of NR 504.06(3)(c) to (j) and the following:					
(a) Nominal geomembrane thickness 40 mils or greater, and no thickness measurements below accepted industry tolerance					
(b) Geomembrane installed in direct contact with the clay capping surface					
(c) Geomembrane penetrations fitted with prefabricated collar or a plate welded at the angle of final cover slope, which allows for differential settlement of waste without damage to the membrane seal					
(6) DRAINAGE ROOTING ZONE LAYER. Does the design include a drainage and rooting zone layer over the geomembrane or the clay cap which meets the following requirements:					
(a) A minimum thickness of 2.5 feet and is not densely compacted					
(b) Drainage layer is designed to be placed immediately above the capping layer					
(c) Drainage layer consists of a 1 foot sand layer with a min. hydraulic conductivity of 1×10^{-3} cm/sec., or a geosynthetic drain layer of equivalent or greater transmissivity					
(d) A perimeter drain pipe at the low end of all final cover sideslopes with the following design elements: ___ Drain pipe surrounded by a minimum of 6 inches of gravel or sand having a minimum hydraulic conductivity of 1×10^{-2} cm/sec ___ Drain pipe outlets spaced 200 feet apart unless different spacing is supported by modeling					
(7) TOPSOIL.					
(a) Is a minimum of 6 inches of topsoil included over the cover layer?					
(b) Is fertilizer and lime addition proposed per section 630, WDOT or other spec.?					
(8) REVEGETATION.					
(a) Is seed type and fertilizer based upon type and quality of topsoil, and compatibility with the native vegetation and final use?					
(b) Is seed mix and application rates per section 630 WDOT specifications unless the department approved different seed mix and application rates?					
(c) Are fertilizer and mulch application rates specified?					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(9) FINAL USE.					
(a) Is final use compatible with the final cover system?					
(b) Are the following activities prohibited when landfill is no longer in operation? ___ Use of waste disposal area for agricultural purposes ___ Establishment or construction of any buildings over the waste disposal areas ___ Excavation of final cover or any waste materials					
NR 504.08 Minimum design and construction criteria for landfill gas extraction systems.					
(1) GENERAL.					
If the landfill has the potential to generate landfill gas, is the landfill designed to prevent the migration of explosive gases generated by the waste?					
(2) ACTIVE GAS EXTRACTION AND TREATMENT. Does landfill design include an active gas recovery system which includes the following features:					
(a) Vertical gas extraction wells with a max. 150 foot radius of influence per well with lesser radii of influence on wells near the perimeter					
(b) Vertical gas extraction wells extending to 10 feet above the leachate collection system, and installed in 36 inch diameter boreholes					
(c) The pipe in the boreholes are a minimum 6 inch diameter, Schedule 80 PVC or an approved equal					
(d) The lower 2/3 to 3/4 of the pipe in the borehole is slotted or perforated pipe					
(e) Backfill around slotted pipe is ½ inch washed stone and the top 10 feet of the borehole is sealed					
(f) Each gas extraction well has a flow control valve and sampling port					
(g) The header system is looped to allow alternate flow paths for the gas					
(h) A minimum slope of 2% for header pipes over the waste					
(i) Polyethylene is used for the header and lateral pipes					
(j) The blower, header and laterals are sized such that a minimum vacuum of 10 inches of water column is available at the well furthest from the blower					
(k) A drip leg or equivalent is installed immediately before the blower while preserving suction at the wells under maximum operating vacuum					
(l) All condensate and gas transfer piping outside waste limits are encased in 2 feet of clay or laid inside a secondary containment except for systems where the bulk of the condensate has been removed					
(m) The system has the ability to collect and treat all condensate, measure volumes and collect samples					
(n) A flare designed to meet the requirements of ch. NR 445					
(3) GAS MONITORING WELLS.					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(a) Does the design provide at least one gas monitoring well on each side of the landfill?					
(b) Are the wells constructed per NR 507.11?					
(4) PASSIVE GAS EXTRACTION SYSTEMS. If the landfill accepts only industrial waste with the potential to generate gas and which does not use an active gas extraction system, is a passive gas venting system proposed which includes the following:					
(a) An analysis to determine vent trench spacing for an effective system and to ensure compliance with ch. NR 445 limits for haz. air contaminants?					
(b) A continuous 1 foot layer of granular soil placed under the capping layer with a minimum hydraulic conductivity of 1×10^{-3} cm/sec					
(c) A series of flexible, perforated pipes connected to a series of outlets					
NR 504.09 Storm water management and miscellaneous design and construction criteria for landfills.					
(1) STORM WATER MANAGEMENT.					
(a) Are drainage ditches, structures and sedimentation basins proposed to be constructed during the initial stages of site construction?					
(b) Are the following concepts incorporated in the design of the temporary and permanent drainage structures: ___ Scheduling of grading and construction to minimize soil exposure ___ Retention of existing vegetation wherever possible ___ Seeding and mulching of disturbed areas ___ Diversion of runoff away from disturbed and active fill areas ___ Minimization of runoff velocities ___ Designing drainageways and outlets to handle concentrated and increased flows ___ Trapping of sediment on-site ___ Inspection and maintenance of runoff control structures					
(c) Are the calculations required in pars. (d), (e) and (f) performed for the period in the landfill's development where the surface conditions and contributing acreage would result in the greatest runoff volume?					
(d) Are all temporary and permanent storm water control structures designed to accommodate peak flow rates from a 25 year, time of concentration storm event?					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(e) Are the storm water management features designed to accommodate the following: ___ Temporary and permanent sediment controls are designed to settle the 0.015mm particle size for all storms up to and including the 25 year, 6 hour event? ___ The sedimentation basin surface area is based upon the average rainfall intensity over the 25 year, 6 hour event? ___ The principal spillway and outlet protection for the sedimentation basin is designed to pass a 25 year, time of concentration storm event? ___ The emergency spillway for the sedimentation basin is designed to pass a 100 year, time of concentration event? ___ The sedimentation basin dewatering structure is designed to drain the basin in less than 3 days ___ A design analysis documenting compliance with the above is included					
(f) Is storm water diverted from active fill and borrow areas to sediment control structures?					
(g) Are the containment berms around active areas designed to comply with the following: ___ Will contain runoff from a 25 year-24 hour storm event ___ Containment analysis is based upon the volume of liquid generated from areas with exposed waste and areas with daily cover ___ Storm water from active areas is treated as leachate					
(h) Are storm water drainage ditches, structures and sedimentation basins designed to discharge along the existing drainage patterns capable of accepting anticipated flow volume?					
(i) Has an analysis been performed to determine the amount and velocity of runoff prior to landfill development and to document compliance with above requirement?					
(j) Does storm water diversion and construction at the landfill minimize impacts on adjacent property?					
(j) Do storm water management features comply with other applicable requirements such as those of, but not limited to, ch. NR 103 and ch. 30, Stats., permits?					
(2) MISCELLANEOUS.					
(a) Is a method of controlling any dust or windblown debris included in the design?					
(b) Is access restricted through fencing, natural barriers or other methods?					
(c) Are all access roads, including those in the active area, designed for all weather operation?					
(d) Are all access roads used by highway vehicles designed with less than 10% grade?					
Is the intersection of the landfill access road with an existing highway designed with sufficient sight distance and min. traffic interference?					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(e) Are all borrow areas designed for proper abandonment per s. 208.3 WDOT specs. for road and bridge construction, (except pre-existing commercial borrow areas)?					
(f) Is a min. 100 foot separation distance between the fill limits and the adjacent property line, and a min. 50 foot distance from landfill excavation or berm and the adjacent property line maintained (excluding storm waste diversion structures)?					
(g) Is the landfill designed such that final waste grades are reached as soon as possible and open refuse filling area is minimized?					
(h) Are the final slopes designed to be no less than 5% and no greater than 4H:1V, except for papermill sludge sites which may have a max.6H:1V final slope for papermill and wastewater treatment sludge landfills?					
(i) Is a minimum of 2 leachate headwells proposed per major horizontal phase?					
(j) Is a weight scale supplied (if proposed as a municipal solid waste landfill)?					
(k) Is landfill designed with properly protected, permanent horizontal and vertical control benchmarks, and are the elevations tied to USGS datum and horizontal control referenced to property boundary?					
NR 504.10 Alternative design criteria for landfills accepting high volume industrial wastes.					
Note: This section applies only to landfills designed primarily for high volume industrial waste, wood residue and minor amounts of other waste as approved by the Department. This section applies to all new landfills and to the expansion of existing landfills for which the plan of operation was approved after 2-1-88.					
(1) GENERAL.					
(a) Has the landfill been designed to either meet the requirements of NR 504.05 to 504.09 or has an alternative design been proposed which meets the following provisions?					
(c) Does municipal waste which is generated by the process, such as manufacturing process packaging not exceed 10% by weight?					
(2) DESIGN CAPACITY.					
Does the design capacity meet NR 504.05(3)?					
(3) DESIGN CRITERIA.					
Does the feasibility study demonstrate that the alternative design adequately protects the public health, welfare and the environment, and the design meets or exceeds the NR 504.04 location and performance standards? Is the alternative design supported with the following types of information:					
(a) Landfill characteristics including regional and specific information on land use, geology, hydrology, hydrogeology and soils					

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DESIGN & CONSTRUCTION CRITERIA REQUIREMENTS	COMPLETE?			LOCATION	COMMENTS
	Y	N	NA		
(b) Waste characteristics such as quantity and physical/chemical analysis of waste and leachate					
(c) Analysis of any design to control geologic/hydrogeologic conditions					
(d) Field demonstration data					
(e) Design and performance data for similarly designed and constructed landfills					
(f) Accepted scientific or engineering analysis or field studies, field plots, research, manufacturer's data or demonstrations					
NR 504.11 Minimum design and construction criteria for landfills accepting residue produced by burning municipal solid waste					
(1) APPLICABILITY. Is the landfill to accept residue produced by the burning of municipal solid waste?					
(2) LANDFILL DESIGN CRITERIA FOR RESIDUE PRODUCED BY BURNING MUNICIPAL SOLID WASTE.					
(a) If the landfill is proposed to accept municipal solid waste combustor residue that tests below the NR 502.13(6)(g) limits, is it a composite lined monofill cell which follows the following criteria:					
1. Does the composite liner consist of a minimum 60 mil geomembrane overlying a minimum 4 foot thick compacted clay liner meeting NR 504.06 specifications?					
2. Is the monocell designed to separately sample and collect leachate from residue areas?					
3. If an alternate design is proposed, such as a double liner, does the design provide equivalent protection?					
(b) If the landfill is proposed to accept municipal solid waste combustor residue that tests above the limits in NR 502.13(6)(g), does the landfill design include a double composite lined monofill cell which meets the following criteria:					
1. Is there a double composite liner with 2 separate composite liners each with a minimum 60 mil geomembrane liner overlying a minimum 4 foot compacted clay liner meeting NR 504.06 specifications?					
2. Is the composite liner separated by a minimum one foot (detection) layer of granular material?					
3. Are separate leachate collection systems designed above and between the composite liners and is separate leachate sampling and collection from the detection layer possible?					
(c) Does the proposal meet the requirements of NR 514.07(5)?					

Legal Note:

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Revised February 2000

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